



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|-------------------|
| 09/773,605 | 02/02/2001 | Tadahiro Ohmi | SUGI0064 | 7328 |
| 7590 | 10/26/2005 | | EXAMINER | |
| Joerg-Uwe Szipl Griffin & Szipl, P.C. Suite PH-1 2300 Ninth Street, South Arlington, VA 22204-2320 | | | | LEUNG, JENNIFER A |
| | | ART UNIT | | PAPER NUMBER |
| | | 1764 | | |
| DATE MAILED: 10/26/2005 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-------------------|--------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/773,605 | OHMI ET AL. |
| | Examiner | Art Unit |
| | Jennifer A. Leung | 1764 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 11 August 2005.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1,22,23,25,26,28 and 30-37 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1,22,23,25,26,28 and 30-37 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>8-11-05</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment submitted on August 11, 2005 has been received and carefully considered. Claims 2-21, 24, 27 and 29 are cancelled. Claims 34-37 are new. Claims 1, 22, 23, 25, 26, 28 and 30-37 remain active.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 23, 25, 26, 30-33, 35 and 36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 23, it is unclear as to where support may be found for the newly added structural limitation that, "the plate has a thickness exceeding one half of the first distance," (lines 21-22). It is noted that the specification merely sets forth that the plate is "relatively thick" (see page 2, lines 12-15). Although applicant points to FIG. 6 in support of the amendment, Patent Office drawings cannot be relied upon for detail as to disclosure since they are not to scale. Also, it is noted that the thickness of the plate varies along its radial direction. Although the thickness of the plate may appear to exceed one half of the first distance at its center, the thickness of the plate clearly does not exceed one half of the first distance at its periphery.

Regarding claim 26, it is unclear as to where support may be found for the newly added structural limitation that, “the first reflector is a thick plate that includes... a thickness exceeding one half of the first distance,” (lines 20-22). It is noted that the specification merely sets forth that the plate is “relatively thick” (see page 2, lines 12-15). Although applicant points to FIG. 6 in support of the amendment, Patent Office drawings cannot be relied upon for detail as to disclosure since they are not to scale. In addition, it is noted that the thickness of the plate varies along its radial direction. Although the thickness of the plate may appear to exceed one half of the first distance at its center, the thickness of the plate clearly does not exceed one half of the first distance at its periphery.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 22 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. (WO 98/57884; US 6,093,662) in view of Ohmi et al. (JP 10-297907; US 6,180,067).

[NOTE: the English Language Equivalents of US ‘662 for WO ‘884 and US ‘067 for JP ‘907 are cited below, for translation purposes only].

Regarding claims 1 and 28, Ohmi et al. ‘662 (FIG. 7; column 7, lines 35-46) discloses an apparatus comprising:

a reactor 1 having an upstream gas inlet side, a downstream moisture outlet side, and a catalyst (i.e., a platinum-coated catalyst layer; column 10, lines 7-25) for generating moisture from hydrogen and oxygen (i.e., supplied via $H_2 \rightarrow$, $O_2 \rightarrow$); and means for reducing pressure provided on the downstream side of the reactor 1, wherein the

means comprises a filter **F₃** and valves **V₆, V₇** (FIG. 7), or in a prior embodiment, suction regulating valve **SV**, valves **V₄, V₅, V₆** for vacuum pump **P** (FIG. 1).

The filter **F₃** is inherently capable of reducing pressure downstream of the reactor and maintaining an internal high pressure within the reactor, as evidenced by the filter comprising “a squeezing mechanism that permits adjustment of pressure or produces pressure loss”, as defined on page 12, lines 9-15, of Applicant’s specification. The valves **V₄, V₅, V₆, V₇** or **SV** are also inherently capable of reducing pressure downstream of the reactor and maintaining an internal high pressure within the reactor, as evidenced by the valves being capable of adjusting the flow rate of moisture, and hence, the pressure within the reactor.

Ohmi et al. ‘662 (FIG. 9; column 9, line 1 to column 10, line 6) further discloses reactor 1 comprising:

a first reactor structural component **2** having a material gas supply joint **4** defining a material gas supply passage **4a**;

a second reactor structural component **3** having a moisture gas take-out joint **5** defining a moisture outlet passage **5a**, wherein the structural components **2, 3** are mated to form a reactor shell **1** having an interior space **1a**, and wherein the second component **3** defines an inside wall surface **3a**; and

reflectors comprising a first reflector (i.e., inlet reflector unit **9**) disposed in the interior space **1a** to face the material gas supply passage **4a**, and/or a second reflector (i.e., outlet reflector unit **12**) disposed in the interior space **1a** to face the moisture outlet passage **5a**;

wherein the first and second reflectors **9** and **12** may comprise identical flat plates of a given thickness (i.e., flat disk portions **9b** and **12b**, made of stainless steel and of about the same

diameter; see FIG. 9; column 9, line 56 to column 10, line 6) symmetrically disposed in the interior space, and wherein the catalyst comprises a platinum coated catalyst layer 13 provided on the inside wall surface 3a of the second reactor structural component 3.

Additionally, the apparatus comprises a process chamber (i.e., semi-conductor manufacturing facilities SM; FIG. 7), wherein reactor 1 is connected to feed the moisture gas to the process chamber SM, via a flow-line containing the means for reducing pressure.

Ohmi et al. '662 is silent as to reactor 1 generating moisture from the catalytic reaction of hydrogen and oxygen at a temperature "not higher than 450°C", or at a temperature "set in the range of 300°C to 450°C". However, Ohmi et al. (column 7, lines 57-63) discloses that,

"The gas preheating coils H₁ and H_{1'} are to heat the mixture gas or oxygen to a desired temperature not higher than 200°C. Reactor 1 is provided with a heater and, as necessary, a cooling unit so that if the reaction heat pushes up the temperature in the reactor in operation to over 500°C. (which rarely happens, though), the cooling unit will be activated to bring the temperature down below 500°C."

Thus, the apparatus of Ohmi et al. '662 is *inherently capable of* maintaining the catalytic reaction below the upper limit of 450 °C, or within the range of 300 °C to 450°C, by simply adjusting the temperature of the gas preheating coils H₁ and H_{1'} or activating the cooling equipment.

Furthermore, *it would have been obvious* for one of ordinary skill in the art at the time the invention was made to select an appropriate temperature for catalytic reaction in the reactor 1 of Ohmi et al. '662 (i.e., such as the instantly recited temperature ranges), on the basis of suitability for the intended use and absent showing any unexpected results thereof, because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Also, numerical ranges that overlap prior art ranges were held to have been obvious. *In re*

Wertheim 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960).

In view of the newly added limitations, Ohmi et al. '662 is silent as to the first and second reflectors each including a beveled peripheral portion inclined in cross section. Ohmi et al. '067 (FIG. 6, 7; column 11, lines 18-26) teaches an alternative reflector for use in the apparatus as disclosed above by Ohmi et al. '662, wherein the Ohmi et al. '067 reflector (i.e., reflector unit 12) includes a beveled peripheral portion (i.e., edge 12b) that is inclined in cross section (i.e., to thereby define a gap G). It would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to substitute the reflector with a beveled peripheral portion as taught by Ohmi et al. '067 for the reflectors in the apparatus of Ohmi et al. '662, on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the claimed reflector configuration has been known in the art, as evidenced by Ohmi et al. '067, and the substitution of known equivalent structures involves ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

Regarding claims 22, the internal pressure within the process chamber SM is not considered an element of the apparatus but a process limitation, and therefore, the apparatus of Ohmi et al. structurally meets the claim.

4. Claims 34 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al. (WO 98/57884; US 6,093,662) in view of Ohmi et al. (JP 10-297907; US 6,180,067), as applied to claims 1 and 28 above, and further in view of the *Mechanical Engineer's Reference Book* (section "6.4 Fasteners").

[NOTE: the English Language Equivalents of US '662 for WO '884 and US '067 for JP '907 are cited below, for translation purposes only].

Ohmi et al. '662 discloses that the reflector **12** of FIG. 9 is fastened, in a similar fashion as the reflector **12** is FIG. 8, by means of welding the periphery of the reflector **12** to the inside wall **3a** of the second reactor structural component **3** (column 9, lines 44-65). Ohmi et al. '662, however, is silent as to the reflector **12** being fastened by other means, such as the claimed bolts to the inside wall surface **3a** of the second reactor structural component **3**. In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to substitute bolts for the welding in the apparatus of Ohmi et al. '662, on the basis of suitability for the intended use, because the use of bolts as an alternative to welding for fastening objects is well known in the art, and the substitution of known equivalent structures involves ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958). The *Mechanical Engineer's Reference Book*, for instance, teaches that the particular choice of conventional fasteners, including welding, bolts, etc., will depend on the intended purpose of the structure, as well as overall cost (see section "6.4 Fasteners").

Response to Arguments

5. Applicant's arguments filed August 11, 2005 have been fully considered but they are not persuasive. Beginning at page 17, line 1, Applicants argue,

"... the "disks" (9) and (12) are not truly "flat", as evidence from Figure 9, because they include structures (9d) and (12a) that are clearly projections disposed at the peripheral portion of the disks (9) and (12)... Consequently, because the disks (9) and (12) have projections (9d) and (12a), these disks taught by the Ohmi '884 Document cannot be

properly construed as “flat”.”

The Examiner respectfully disagrees. US 6,093,662, the English Language Equivalent of “Ohmi ‘884” (WO 98/57884), specifically calls the disks “flat” (see column 9, lines 55-65). In particular, the reference states that,

“The inlet reflector unit **9** and the outlet reflector unit **12** are flat disks made of stainless (JIS designation SUS 316 L).”

Thus, the apparatus of Ohmi ‘884 structurally meets the claim.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Calderola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer A. Leung
October 24, 2005

[Signature]

Hien Tran

HIEN TRAN
PRIMARY EXAMINER